इंटरनेट मानक

Disclosure to Promote the Right To Information

Whereas the Parliament of India has set out to provide a practical regime of right to information for citizens to secure access to information under the control of public authorities, in order to promote transparency and accountability in the working of every public authority, and whereas the attached publication of the Bureau of Indian Standards is of particular interest to the public, particularly disadvantaged communities and those engaged in the pursuit of education and knowledge, the attached public safety standard is made available to promote the timely dissemination of this information in an accurate manner to the public.

“जानने का अधिकार, जीने का अधिकार”
Mazdoor Kisan Shakti Sangathan
“The Right to Information, The Right to Live”

“पुराने को छोड नये के तरफ”
Jawaharlal Nehru
“Step Out From the Old to the New”

IS 8554 (1977): Method of checking insulation of anodized coating by measurement of break down potential [MTD 24: Corrosion Protection]

“ज्ञान से एक नये भारत का निर्माण”
Satyanarayan Gangaram Pitroda
“Invent a New India Using Knowledge”

Act Number 22 of 2005
The Indian Parliament
RIGHT TO INFORMATION

Made Available By
Public.Resource.Org

“ज्ञान एक ऐसा खजाना है जो कभी चुराया नहीं जा सकता है”
Bhartṛhari—Nītiśatakam
“Knowledge is such a treasure which cannot be stolen”

BLANK PAGE

BRUTUM FULMEN

IGNORANTIA JURIS NON EXCUSAT

PROTECTED BY COPYRIGHT

Indian Standard

METHOD OF CHECKING INSULATION OF ANODIZED COATING BY MEASUREMENT OF BREAKDOWN POTENTIAL

UDC 669·716·915·621·317·32

© *Copyright* 1977

INDIAN STANDARDS INSTITUTION
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

November 1977

AMENDMENT NO. 1 MARCH 1984

TO

IS:8554-1977 METHOD OF CHECKING INSULATION OF ANODIZED COATING BY MEASUREMENT OF BREAKDOWN POTENTIAL

Addendum

(*Page 3, clause 1.1*) – Add the following new clause after 1.1:

'1.2 The test shall not be applicable to cut edges or edges of the holes of anodized coatings of aluminium and its alloys, unless otherwise specified.'

(SMDC 23)

Reprography Unit, ISI, New Delhi, India

Indian Standard

METHOD OF CHECKING INSULATION OF ANODIZED COATING BY MEASUREMENT OF BREAKDOWN POTENTIAL

Metallic Finishes Sectional Committee, SMDC 23

Chairman	*Representing*
Dr S. Krishnamurthy	Indian Telephone Industries Ltd, Bangalore
Members	
Shri K. Balakrishanan	Central Electrochemical Research Institute (CSIR), Karaikudi
Shri S. R. Natarajan (*Alternate*)	
Shri M. Y. Borker	Ministry of Defence (DGI)
Shri P. K. Sen (*Alternate*)	
Shri M. S. Chakravorty	Premier Metal Finishers (P) Ltd, Calcutta
Shri Ahindra Chatterjee	Canning Mitra Phoenix Ltd, Bombay
Shri S. V. Kulkarni (*Alternate*)	
Shri D. K. Chatterjee	Sen-Releigh Ltd, Asansol
Chemist & Metallurgist, Integral Coach Factory, Perambur	Ministry of Railways
Chemist & Metallurgist II, Research, Designs and Standards Organization, Lucknow (*Alternate*)	
Shri O. P. Chhabra	Bharat Heavy Electricals Ltd, Ranipur
Shri R. M. Singhal (*Alternate*)	
Shri Kantilal T. Dalal	Kohinoor Electro-Gilders, Bombay
Shri Jayendra K. Dalal (*Alternate*)	
Shri P. K. Deshpande	The Premier Automobiles Ltd, Bombay
Shri A. G. Prabhu (*Alternate*)	
Shri C. P. Dey	Hindustan Motors Ltd, Calcutta
Shri M. Z. Khan	Geep Flashlight Industries Ltd, Allahabad
Shri N. C. Roy (*Alternate* I)	
Shri K. A. Siddiqui (*Alternate* II)	
Shri U. G. K. Menon	Ministry of Defence (R & D)
Shri G. R. K. Murthy (*Alternate*)	
Shri S. Panchapakesan	T. I. Cycles of India, Madras
Shri R. Venkataraman (*Alternate*)	

(*Continued on page* 2)

© *Copyright* 1977
INDIAN STANDARDS INSTITUTION

This publication is protected under the *Indian Copyright Act* (XIV of 1957) and reproduction in whole or in part by any means except with written permission of the publisher shall be deemed to be an infringement of copyright under the said Act.

(Continued from page 1)

Members	*Representing*
Shri S. K. Ray	National Metallurgical Laboratory (CSIR), Jamshedpur
Shri R. Sen	Hindustan Cables Ltd, Rupnarainpur (Dist Burdwan)
Shri Kalyan Ghosh (*Alternate*)	
Shri R. A. Shah	Ronuk Industries Ltd, Bombay
Kumari Mridula A. Shah (*Alternate*)	
Shri Suresh R. Shah	Grauer and Weil (India) Ltd, Bombay
Shri Sushil Goinka (*Alternate*)	
Dr R. C. Sharma	Eveready Flashlight Company, Lucknow
Shri C. R. Rama Rao, Director (Struc & Met)	Director General, ISI (*Ex-officio Member*)

Secretary

Shri S. L. Bali
Deputy Director (Met), ISI

Indian Standard

METHOD OF CHECKING INSULATION OF ANODIZED COATING BY MEASUREMENT OF BREAKDOWN POTENTIAL

0. FOREWORD

0.1 This Indian Standard was adopted by the Indian Standards Institution on 22 August 1977, after the draft finalized by the Metallic Finishes Sectional Committee had been approved by the Structural and Metals Division Council.

0.2 The measurement of breakdown potential of anodized coatings on aluminium and its alloys is used for checking insulation of these coatings. This method is also used for checking thickness of anodic coatings for control purposes. Need was felt to prescribe a procedure including details about the apparatus required for these purposes.

0.3 While preparing this standard, the views of producers and consumers were taken into account and the standard has been related to the manufacturing and trade practices followed in the country in this field. Also assistance has been derived from ISO 2376-1972 'Anodization (anodic oxidation) of aluminium and its alloys — Insulation check by measurement of breakdown potential' issued by the International Organization for Standardization.

0.4 In reporting the result of a test or analysis made in accordance with this standard, if the final value, observed or calculated, is to be rounded off, it shall be done in accordance with IS : 2-1960*.

1. SCOPE

1.1 This standard specifies the method of checking the insulation of anodized coating of aluminium and its alloys to determine the breakdown potential. This standard applies to cases where anodizing is carried out for purposes of electrical insulation. (The breakdown voltage may be used for approximate determination of thickness of anodic coating for control purposes.)

2. PRINCIPLE

2.1 The measurement is normally carried out on pieces which have undergone sealing after anodization and drying, to the exclusion of all varnishing or other covering.

---

*Rules for rounding off numerical values (*revised*).

2.2 The measurement of the breakdown potential depends on the dielectric characteristics and the insulation properties of the oxide coating. The voltage at which current first passes through the coating is measured. This voltage depends on the thickness of the anodic film, as well as on many other factors, in particular, the type of anodic coating, the surface condition, composition of the basis metal, effectiveness of the sealing and the dryness of the piece and its ageing.

3. APPARATUS

3.1 The output of the test apparatus shall be capable of supplying continuously variable alternating voltage with a reading sensitivity of 10 V. The frequency of supply shall be 50 or 60 Hz. Two electrode systems are suitable, namely:

a) the system with a metal ball of 3 to 8 mm in diameter applied on the surface, the other electrode consisting generally of a point in contact with the basis metal;

b) the system with two metal balls of the same diameter separated by a distance of 25 mm.

3.1.1 In both cases, the balls shall be clean and applied with a force between 0·5 and 1 N. The rate of increase of the voltage shall be 25 V/s.

4. PROCEDURE

4.1 Proceed in accordance with the directions given by the supplier of the apparatus.

4.2 In particular, the two electrodes shall be placed on the piece a few centimetres from each other on a flat, smooth or machined part, or on a curve of more than 5 mm radius and at least 5 mm from a sharp edge.

4.3 For narrow products, the test may be carried out on the long axis, provided, however, that the electrodes are at least 1 mm from a sharp edge.

4.4 Record the voltage corresponding to the electrical breakdown of the coating. Repeat the measurement at ten different points on the piece and calculate the arithmetical mean.

5. EXPRESSION OF RESULTS

5.1 Record the arithmetical mean of the results of ten measurements taken at different points of the piece as the breakdown potential. If one ball is used (the other electrode being in contact with the basis metal) the reading represents the effective breakdown potential of the coating. If two balls are used, the reading represents approximately double the breakdown potential.

INTERNATIONAL SYSTEM OF UNITS (SI UNITS)

Base Units

Quantity	*Unit*	*Symbol*
Length	metre	m
Mass	kilogram	kg
Time	second	s
Electric current	ampere	A
Thermodynamic temperature	kelvin	K
Luminous intensity	candela	cd
Amount of substance	mole	mol

Supplementary Units

Quantity	*Unit*	*Symbol*
Plane angle	radian	rad
Solid angle	steradian	sr

Derived Units

Quantity	*Unit*	*Symbol*	*Conversion*
Force	newton	N	1 N = 1 kg.1 m/s^2
Energy	joule	J	1 J = 1 N.m
Power	watt	W	1 W = 1 J/s
Flux	weber	Wb	1 Wb = 1 V.s
Flux density	tesla	T	1 T = 1 Wb/m^2
Frequency	hertz	Hz	1 Hz = 1 c/s (s^{-1})
Electric conductance	siemens	S	1 S = 1 A/V
Pressure, stress	pascal	Pa	1 Pa = 1 N/m^2

INDIAN STANDARDS INSTITUTION

Manak Bhavan, 9 Bahadur Shah Zafar Marg, NEW DELHI 110002

Telephone : 27 01 31 (20 lines) **Telegrams : Manaksanstha**

***Regional Offices* :**

			Telephone
Western	: Novelty Chambers, Grant Road	BOMBAY 400007	37 97 29
Eastern	: 5 Chowringhee Approach	CALCUTTA 700072	23-08 02
Southern	: C.I.T. Campus, Adyar	MADRAS 600020	41 24 42

***Branch Offices* :**

'Pushpak' Nurmohamed Shaikh Marg, Khanpur	AHMADABAD 380001	2 03 91
'F' Block, Unity Bldg, Narasimharaja Square	BANGALORE 560002	2 76 49
606 Shaheed Nagar	BHUBANESHWAR 751007	5 36 27
Ahimsa Bldg, SCO 82-83, Sector 17C	CHANDIGARH 160017	2 83 20
5-8-56/57 L. N. Gupta Marg	HYDERABAD 500001	22 10 83
D-277 Todarmal Marg, Banipark	JAIPUR 302006	7 63 16
117/418 B Sarvodaya Nagar	KANPUR 208005	82 72
B.C.I. Bldg (3rd Floor), Gandhi Maidan East	PATNA 800004	5 36 55
Hantex Bldg (2nd Floor), Rly Station Road	TRIVANDRUM 695001	32 27

Printed at Printograph, New Delhi, India